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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/677,473

10/03/2003

Akira Sekiguchi

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01/25/2005

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EXAMINER

SEVER, ANDREW T

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-A

**Office Action Summary**

Application No.

10/677,473

Applicant(s)

SEKIGUCHI ET AL.

Examiner

Andrew T Sever

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/4/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 11/04/2004. These drawings are acceptable.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Bierhuizen et al. (US 2003/0214617.)

Bierhuizen teaches in figure 6 a lamp comprising:

An illuminant section having an illuminant (28, specified in paragraph 38 to be an arc lamp) for radiating light, having a size determined by an arc length and direction of the arc length along an optical axis of the lamp, the illuminant having a center point (as clearly can be seen the direction of the arc length is along the optical axis of the lamp, further it is inherent that illuminant section would be designed around the size of the arc lamp.);

A lamp reflector for condensing light flux emitted from the center point of the illuminant, the reflector being an ellipsoid of revolution about the optical axis and the center point of the illuminant being located at an ellipsoidal focus of the lamp reflector and on the optical axis (paragraph 63 teaches that the reflector is 138 is aspheric and in paragraph 52 it is taught that for another preferred embodiment it is ellipsoidal with the arc lamp mounted at the first focus, and it should be noted that ellipsoidal reflectors are inherently aspheric (they are not a sphere)); and

A lamp front glass (140) having a plate-shaped incident surface and a plate-shaped outgoing surface, for receiving the light flux reflected by the lamp reflector through the incident surface and outputting the light flux through the outgoing surface, wherein

The ellipsoid of revolution of the lamp reflector is a deformed aspherical reflection surface, which has a rotational symmetry about the optical axis (by inspection the reflector has rotational symmetry), including a plurality of infinitesimal mirrors arranged so that

Each of the plurality of infinitesimal mirrors reflects a respective light ray corresponding to a respective intersection with a plane containing the lamp front glass, the light rays being obtained by dividing an angular range of the light produced by the illuminant into  $N$  uniform angles, where  $N$  is a natural number, in a direction from a condensing point on the optical axis, where the light rays intersect, toward the lamp front glass, and

The infinitesimal mirrors are located at respective intersections between the corresponding light rays and respective lines extending from a reflection surface of an adjacent infinitesimal mirror so that each infinitesimal mirror reflects the corresponding light ray to the respective intersection, (All surfaces of revolution including ellipsoid revolutions could be described as a plurality of infinitesimal surfaces (mirrors) placed next to each other and infinitesimally displayed from the previous infinitesimal surface at an infinitesimally different angle from the previous surface according to the formula for the surface of revolution which would in this case be that for a ellipsoid. See any elementary Calculus text on surfaces of revolutions as well as applicant's prior art JP 2002-214563 as provided in applicant's IDS, figure 6 shows infinitesimal mirrors making up a parabolic mirror, an ellipsoidal mirror is made the same way.)

At least one of the incident surface and the outgoing surface of the lamp front glass a deformed aspherical lens surface which has a rotational symmetry about the optical axis (again by inspection), and

A different power for each radiation direction is applied by the aspherical reflection surface and the aspherical lens surface, suppressing distribution of divergence angles of the light flux at the outgoing surface of the lamp front glass (Bierhuizen teaches in paragraph 63 that the combination of the lens and reflector is to focus the light onto a point with minimal overfill (suppression of distribution of divergence angles) or to completely eliminate it).

*With regards to applicant's claim 2:*

Since Bierhuizen teaches that the lamp front glass achieves minimal overfill and can completely eliminate it, especially in the case of completely eliminating it the divergence angles would be constant.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-~~6~~ and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bierhuizen as applied to claims 1 and 2 above, and further in view of Levis et al. (US 5,884,991.)

As explained in more detail above, Bierhuizen teaches a condensining optical system with a lamp, which is described in more detail above.

Bierhuizen does not teach specifically an integrator optical system and condensining optical system, wherein the integrator optical system has a square pole shape having an incident plane and an outgoing plane with a rectangular shape. Levis teaches such a system in figure 2. Levis teaches an illuminant (1), an elliptical reflector (2), a square integrator optical system 3, which further has a mirror system at its incident aperture which is larger then that at is outgoing aperture similar to that shown in applicant's figure 18A. Lewis teaches in column 4 lines 47-61 that this integrator in combination with the elliptical reflector produces a reduction in the angle population of

the outgoing beam and reduces the physical length of the light engine both of which are useful. (The reduction in the physical length of the light engine ultimately allows for a smaller optical device/projector.) Accordingly it would be obvious to one of ordinary skill in the art at the time the invention was made to use the integrator optical system of Levis in a projection system as taught by Bierhuizen (although not specifically described above, Bierhuizen teaches a lamp in a projection system which does include in some embodiments a condensing optical system. See for example figure 6, which includes a projection lens (27) and a modulator (26).)

*With regards to applicant's claims 5 and 7:*

Levis teaches in figure 2 a relay lens 6 (relay optical system), a light modulation means, which is an LCD (7) as claimed in applicant's claim 7, and a projection lens.

*With regards to applicant's claim 6:*

Although neither Levis nor Bierhuizen specifically teaches a optical modulation element which includes a plurality of mirrors (such as a DMD), DMD's and LCD's are considered interchangeable as evidenced US 6,205,271 to Bowron et al. which both teaches in column 1 lines 10-23, US 2003/0063261 to Li which teaches in paragraph 46 all three common types of modulators (LCOS, DMD, and LCDs.) Accordingly given it is well known to exchange reflective LCDs (Bierhuizen's part 26 is a reflective LCD or LCOS) with DMDs as they are interchangeable and chosen for economic and other reasons outside the scope of the present invention, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to use a DMD in the display system of Bierhuizen in view of Levis. (See Smith v. Hayashi, 209 USPQ 754 and In re Fout, 675 F.2d 297, 213 USPQ 532.)

### *Response to Arguments*

6. Applicant's arguments filed 11/04/2004 have been fully considered but they are not persuasive.

Applicant argues that the new limitations that have been added to claim 1 overcome the prior art, mainly Bierhuizen. Although applicant has not specifically pointed out from where in the specification the amended language originated from, it is believed that it came from the description of figure 13. Figure 13, however is simply a mathematical model and ray diagram of a standard ellipsoid reflector, for calculating/determining where specific rays would interface with the lamp front glass. There is no language suggesting that one of ordinary skill in the art picking up applicant's claimed reflector and a standard ellipsoid reflector that had the same focuses would be able to discern any difference. What it appears applicant has added to the claims is simply a description of what every science/engineering student learns in a college calculus class; that complex objects (Such as a parabolic curved mirror) can be approximated by an infinite number of infinitesimal little uncomplicated objects such as flat mirrors that are then summed together (integral calculus).



Accordingly applicant's amendment is not deemed to have overcome Bierhuizen or any combination. The rejections have had small grammatical or form changes made and the rejection of claim 6 has been slightly clarified since applicant expressed some confusion in applicant's arguments. To insure clarity; the basis of the rejection of claim 6 is Bierhuizen in view of Levis and in view of the well-known interchangeability of certain reflective light modulators (it should also be noted that applicant uses them interchangeably on page 7 line 29 through page 8 line 1.)

All grounds of rejection remain the same with the only major change being the result of applicant's amendment and accordingly the rejection is made final.

With regards to applicant's issuance of a corrected filing receipt; the examiner has noted that the inventorship has been changed on the bibliographic data sheet and no reference to a foreign application is made on it. Accordingly the examiner assumes that the issue has subsequently been resolved, however if it has not been, applicant is invited to contact the examiner (Andrew Sever) during normal business hours at 571-275-2128 and he will be more than happy to try and help get any remaining issues corrected or refer applicant to the proper person to correct them.

### *Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2851

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS

  
**JUDY NGUYEN**  
**SUPERVISORY PATENT EXAMINER**